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Excitation of single-frequency spin waves in exchange-biased IrMn/Co by ultrafast laser repinning KEOKI SEU, HAILONG HUANG, ANNE REILLY, Department of Phyiscs, College of William and Mary — We have excited and detected coherent spin waves in exchange-biased IrMn/Co using the all-optical ultrafast laser pump probe technique. The laser pump produces changes in the exchange biasing which launches spin waves which are detected by the magnetooptical Kerr effect. The oscillations are single frequency and can be described according to ferromagnetic resonance equations. Unlike previous work in these systems [1-3], oscillations have been detected when the applied magnetic field is along any direction relative to the pinning axis, including directly along the easy axis, and in fields larger than the magnetic saturation. This is contrary to energetic arguments and predictions from the Landau Lifshitz Gilbert equation[1]. Our suggested mechanism for these oscillations is a destruction and re-pinning of the exchange-bias interaction, introducing a 'kick' required for the magnetization to precess. Evidence of this ultrafast laser repinning will be presented. 1 Ganping Ju, et al., Phys. Rev. B. 62 1171 (2000). 2 M. C. Weber, et al., Eur. Phys. J. B. 45 243 (2005). 3 Ganping Ju, et al., Phys. Rev. Lett. 82 3705 (1999).

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